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HAY STACKERS AND THEIR USE



THE STACKER enables the user to deliver hay onto the stack by horse power instead of by man power.

If the sweep rake or the hay loader is used in connection with slings, fork, or stacker, pitching by hand is reduced to a minimum.

Stackers are comparatively inexpensive, and there are several homemade types which are efficient and comparatively easy and cheap to construct.

Larger stacks can be built with stackers than by hand, thus reducing the quantity of waste hay on the outside of the stack.

When hay is loaded on a wagon by hand and unloaded with slings or a fork, about half the usual hand labor is eliminated.

This bulletin supersedes Farmers' Bulletin 1009, Hay Stackers, How They May Be Used in the East and South to Save Labor, by H. B. McClure.

HAY STACKERS AND THEIR USE

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INTRODUCTION

HAY STACKERS enable the farmer to handle a given quantity of hay more rapidly than by other methods, and under most conditions a smaller crew is required.

Some types of hay stackers used on farms in the Corn Belt and Western States could be used to advantage on many farms in the Eastern and Southern States on which stackers are seldom used, but on which the hay is stacked. In some sections of the Corn Belt and Western States, it is possible that better types of stackers could be used than those that are now common.

Many eastern and southern farmers have tried stackers but some have abandoned them, owing partly to inexperience and partly to difficulty in getting their men to give them a fair trial. Some farmers have tried out light and cheaply constructed stackers not suited to their conditions. Other farmers, who have been in the habit of making small stacks containing from 1½ to 3 tons, have not attempted to use stackers because they think that hay will not keep in the large stack that is usually made with a stacker—an objection not based on facts. Large stacks tend to reduce loss caused by weathering. Putting hay into a barn or shed is preferable to stacking in these regions, and when hay is stored under cover it is often possible to use certain types of stackers. This bulletin describes the different types and styles of stackers, their cost, conditions favorable for the use of the different types and styles, the size of the stack that can be built with each, and the size and duty of various crews.

Hay stackers may be divided into four general types, according to the way they handle the hay. One type is represented by the "overshot" the "swinging" and the "combination" stacker. Each of these has long wooden teeth, like those of a sweep rake. The sweep rake drops its load of hay directly on these teeth which in turn elevate it to the stack.

A second type is represented by the homemade slide stacker and plunger. The entire stacker is constructed of long poles, those forming the slide being placed at a 45° angle. A sweep rake delivers its load at the bottom of the stacker and a plunger with a heavy frame on the front, operated by a team pushes the hay up the slide and onto the stack.

The third type of stackers represented by the cable and derrick outfits do not receive hay directly from sweep rakes but handle it by means of horse forks or slings. The material used for their construction is usually assembled on the farm.

The fourth type is used only to a limited extent. This type uses ropes to elevate the hay to the stack. Compared with other types it is simple and requires little if any cash outlay for equipment.

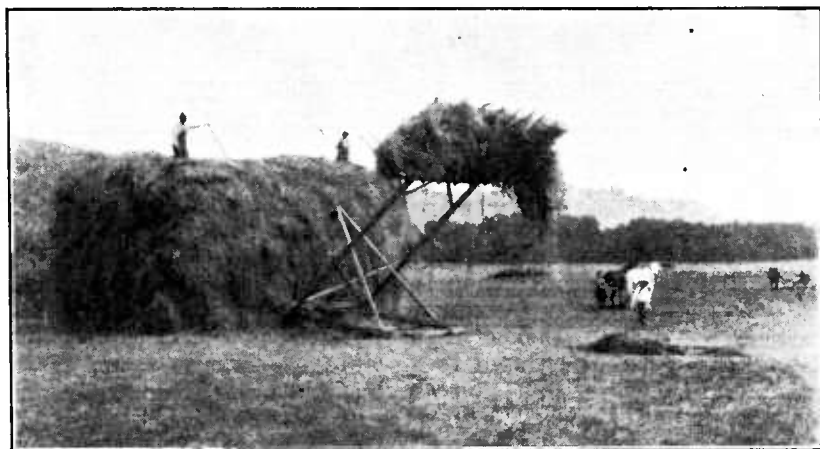


FIGURE 1.—A common style of overshot stacker which is widely used. Two or three sweep rakes can be used with this outfit

OVERSHOT STACKERS

The overshot stacker (fig. 1) is so called because the hay is carried up and over the stacker frame and is delivered at one point on the stack. This necessitates considerable moving of hay by hand when the stack is large.

Nearly all stackers of this type are constructed of wood. In most instances the stacker is mounted on a heavy frame which serves as a sled to move the stacker from place to place. Some of these stackers are made of extra-heavy material for use where large acreages of hay are put up, and it is customary to load them heavily. A lighter and cheaper type is available for small farms and gives satisfactory service if the loads handled are not too heavy.

One style of overshot stacker is made with an inclined front (fig. 2), up which the head carrying the hay, mounted on small wheels, travels to the top, whence the hay is dumped on the stack.

A device, consisting of springs or weights that counterbalance the weight of the stacker head while the latter is returning to the ground after the hay has been dropped on the stack, is a very desir-

able feature. Without it the team must be backed slowly, holding the weight of the empty head until it reaches the ground. This causes loss of time and lessens the capacity of the stacker.



FIGURE 2.—Stacking hay with an inclined front overshot stacker mounted on wheels. Two or three sweeps are used with this outfit. With this style of stacker nearly all the heavy hand work is eliminated

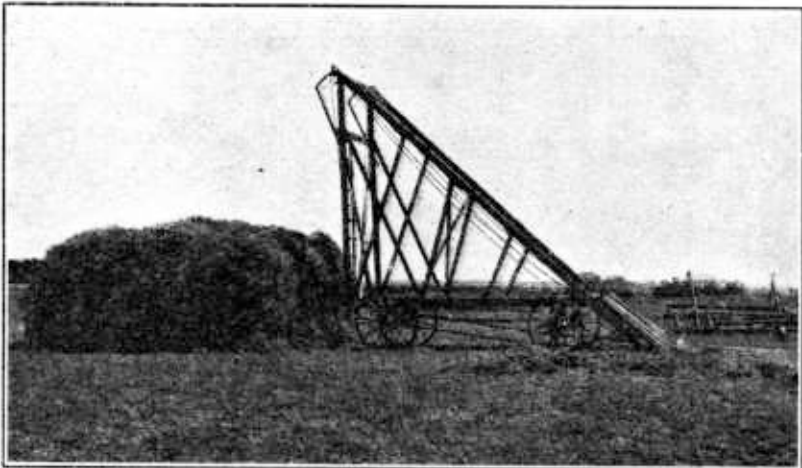


FIGURE 3.—An inclined front overshot stacker mounted on wheels, which makes it easy and quick to move to a new set

Some styles of the overshot stacker can be mounted on wheels which allows the stacker to be easily and quickly moved. Often the running gears of an old wagon or truck will be satisfactory for this purpose. (Fig. 3.)

When putting up wild hay with an overshot stacker, it is possible to save the labor of one man on the stack by using a contrivance called a "frontboard and backboard." In some wild-hay districts extensive use is made of this device of which there are several styles.

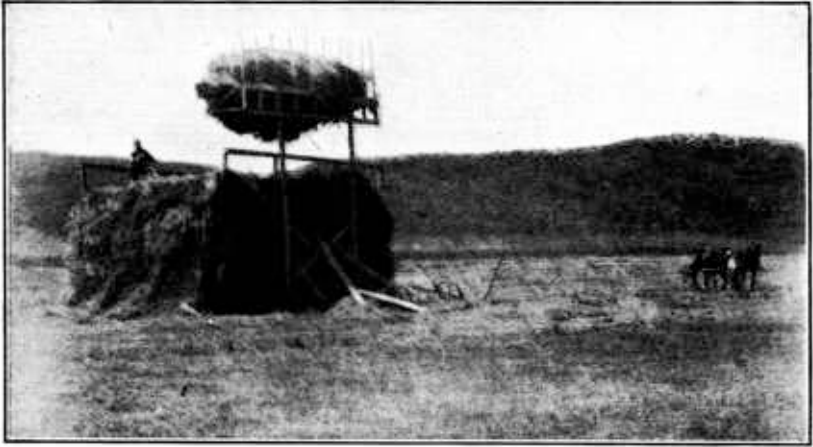


FIGURE 4.—The frontboard and backboard in use with an overshot stacker in stacking wild hay

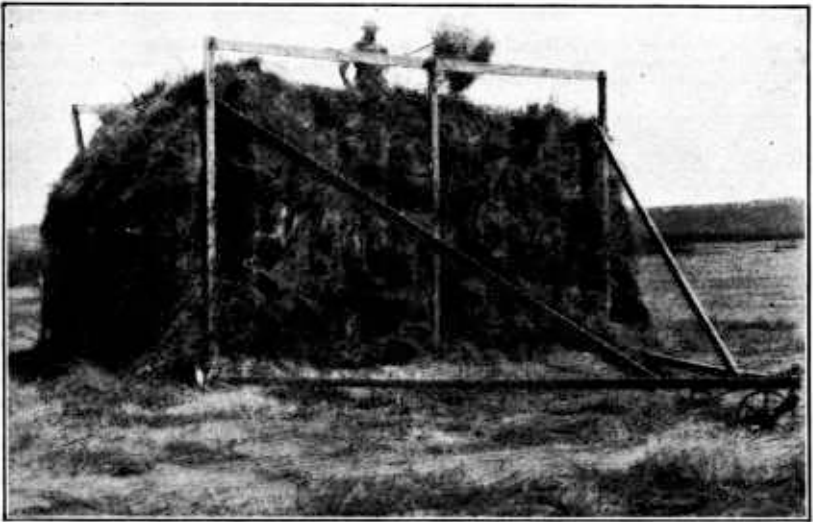


FIGURE 5.—The backboard, the setting of which regulates the width of the stack. A stake driven in the ground, and to which the caster wheel in front is attached by a chain, prevents the backboard from moving

The frontboard (fig. 4) is attached to the stacker, whereas the backboard (fig. 5) is built on wheels or shoes so that it can be easily moved about the hayfields. By using this device the front and rear of the stack can be built without much work on the part of the stack man. He must merely walk along the sides of the stack and force

the hay down so it will shed water. The ends, being open, are handled in the usual way. This method of stacking enables one man on the stack to handle a quantity of hay which ordinarily requires two men.

Frames for the frontboard and backboard should be 10 to 12 feet high and about 18 feet long and made of 2 by 6 inch lumber. Smooth, heavy wire is stretched up and down the frame at about 1-foot intervals. Boards may be used in place of the wire, but they increase the weight, and breakage is more frequent.

The cost of an overshot stacker depends upon the style and construction. The cheapest of these stackers may be bought for about \$75; the more expensive outfits range up to about \$125.

The overshot stacker is well adapted to building stacks of different size and is perhaps more popular with the average hay grower than is any other type. It can be used with either a small or a large crew and, when mounted on wheels, can be moved to a new stack site in a few minutes with hardly any loss of time on the part of the crew. With this outfit stacks ranging up to 30 tons or more can be built.

For stacking alfalfa or mixed hay most crews consist of five men. The hay is brought into the stacker by two sweep rakes. Two men stacking the hay and a man or boy to drive the stacker team, as in Figure 1, complete the crew. From 30 to 40 tons of hay are stacked by this crew in one day.

In localities where wild hay is put up and the frontboard and backboard are used with the overshot stacker a crew of five men is ordinarily employed. Two sweep rakes are used to haul the hay to the stacker from the windrow. One man on the stack, a man or boy to drive the stacker team, and a man to rake the scatterings complete the crew, which puts up about 32 tons of hay daily. By adding two sweeps to the crew about 60 tons of hay are put up daily. To handle this quantity of hay the man on the stack should be relieved by changing places with other members of the crew.

The smallest possible crew for this method is composed of one man on the stack, a boy to drive the stacker team, and one man with a sweep rake. This crew will put 10 to 15 tons in the stack a day. This size of crew is not as economical as the larger crews, but it handles hay more rapidly than a 3-man crew can, following any of the methods in which hand labor is used.

SWINGING STACKERS

The swinging stacker (figs. 6 and 7) has a head for carrying the hay which swings sidewise and upward instead of vertically, the hay sliding off the ends of the teeth when being deposited on the stack. Otherwise it is somewhat similar to the overshot type. The principal advantage of the swinging stacker over the overshot is its ability to deliver the load of hay to different parts of the stack, thus reducing the amount of work required on the stack.

With some styles of swinging stackers it is possible to load from either side at the will of the operator, so that the sweep rakes do not interfere with each other as much as when using other types. With

a good operator, this stacker has perhaps greater capacity than any other type for as many as six or eight sweep rakes can be used with it. In the hands of a poor operator it is an unsatisfactory type to use.



FIGURE 6.—A swinging stacker ready to drop its load on the stack. This outfit takes a load from either side and can be set to drop the hay at different points on the stack. As many as eight sweep rakes can be used with this style of stacker



FIGURE 7.—This style of swinging stacker has a weighted box on the lower end of the swinging arm to counterbalance the weight of the head. With this style the load has to be tripped by hand

These stackers, like some of the overshot outfits, are too lightly constructed for use when heavy loads are handled.

The cost of this style of stacker is about the same as that of the overshot outfits.

With the swinging stacker, the same sizes of stacks can be made as with an overshot, and this stacker has the same advantage that the overshot has, namely, it can be used with a small or a large crew. But it can not be moved as quickly as can the overshot stacker that is mounted on wheels.

When speed is necessary, a larger crew can be used with a swinging stacker and more hay can be put up than with any other stacker of this type. About the maximum crew for a swinging stacker which loads from both sides is made up of 6 men on sweep rakes, 2 men on the stack, 1 man driving the stacker team, 1 man raking scatterings, and 1 clean-up man around the stack. The stacker loads first from one

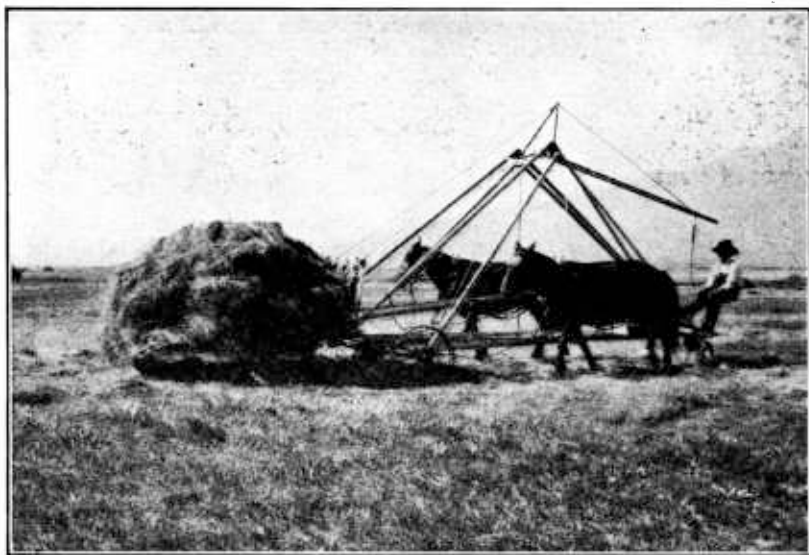


FIGURE 8.—A loaded combination stacker. The hay is sometimes taken from the windrow by the stacker, but more often is delivered to the stacker by sweep rakers

side and then from the other, so that three sweeps operate from each side, thus avoiding confusion around the stack. A crew of this size can put up from 80 to 100 tons daily.

COMBINATION STACKERS

A combination of sweep rake and stacker does the work of both. This style of stacker is mounted on wheels and operates by being driven over the ground. An elevating mechanism is engaged when the stacker is about 80 to 100 feet from the stack, and the rake with its load is then lifted, as the stacker advances, until it is high enough for the load to be deposited upon the stack. (Figs. 8 and 9.)

The combination stacker can be used to take the hay from the windrow, swath, cock, or sweep rake, and place it on the stack in the same way as does the overshot stacker, but with the combination stacker the hay can be placed on any desired part of the stack. (Fig. 10.)

It can be used to advantage to load hay from the windrow or cock on wagons when labor is scarce, or when the distance is too great to haul the hay with the stacker or the sweep rake. Its most common



FIGURE 9.—The combination stacker putting hay on the stack. It can place the hay on the stack from either side or from the end, and the direction of the wind does not affect its usefulness in the least. Stacks a little more than 20 feet high can be made with this outfit

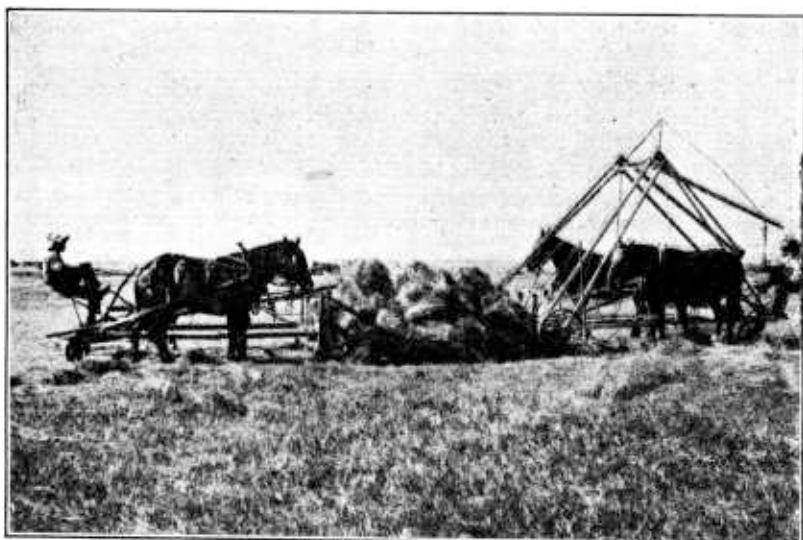


FIGURE 10.—Loading a combination stacker with a sweep rake, with hay taken from the cock or windrow. In the case of long hauls or on rough ground this is the best method of using a combination stacker

use is near the stack, where it handles the hay brought in by sweep rakes. When starting a new stack with this style of stacker, no time is lost in moving or setting the outfit. In building a stack, the hay can be placed at either end or at either side, this allowing a change of

position if the wind shifts during the stacking operation. This stacker, in comparison with others, has a rather low daily capacity, together with a higher first cost. When used to bring in hay from the windrow or cock in meadows that are rough and uneven, because of its excessive weight, this outfit is hard on the team and does rather unsatisfactory work.

The cost of a combination stacker is somewhat higher than that of either the overshot or swinging style.

Stacks of any desired length can be made with the combination stacker without necessitating any extra labor on the stack, because with this stacker hay can be placed on any desired part of the stack, from either side or either end. It can be used to build very small stacks as easily as long ones. The extreme height of stacks made with the combination stacker is from 20 to 23 feet. The tonnage of hay in stacks built with a combination stacker is dependent upon the length of the stack made at each setting.

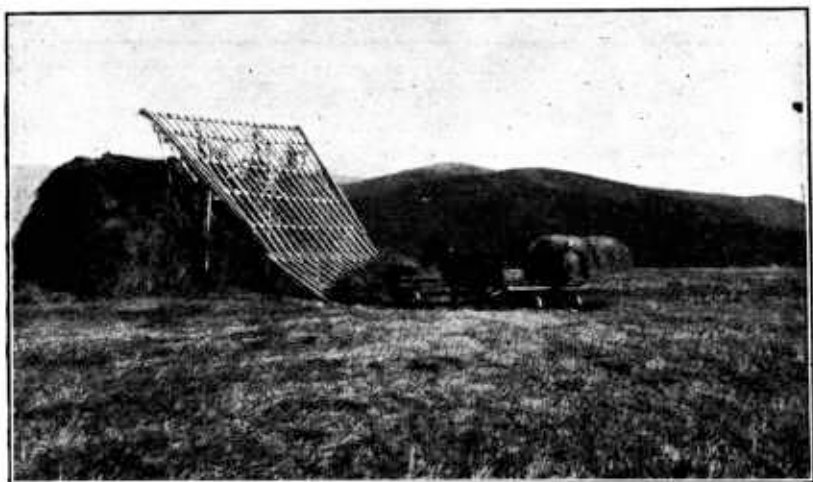


FIGURE 11.—A sweep rake delivering a load of hay at the base of a fan-shaped slide stacker. When the sweep is backed away the hay is shoved up the slide by a plunger.

A crew consisting of 1 man on the combination stacker, 3 men on sweeps, 1 man on the stack, and 1 to rake scatterings, will put up 35 to 40 tons per day. Only 1 stack man is necessary as the stacker delivers hay to any desired point on the stack and the sweeps deliver the hay to the stacker. (Fig. 10.)

SLIDE STACKERS

The slide type of stacker, which is a homemade outfit built like a slide, is constructed entirely of poles from which the bark and all rough spots have been removed, or is made from smooth boards and timber and mounted on slides. A plunger which elevates the hay completes the outfit.

Three styles of this stacker are in use. The first, which is perhaps the most efficient, is fan shaped, being wider at the top than at the bottom (fig. 11); the second is the same width throughout; and the third has a solid slide built of smooth boards.

In the pole styles the lower 6 feet of the slide is usually constructed of movable sections of six to eight teeth each. These sections can be lifted and shoved back into the body of the stacker, when it is moved to a new set. The poles on the remainder of the slide are continuous. Most slides have a guard rail on each side to prevent the plunger from running off when the hay is being elevated.

The elevating device consists of a plunger (fig. 12), constructed of a pole about 35 feet long, on the front of which is a heavy frame of poles or timber about 12 feet wide, 3 feet high, and 12 to 16 feet long, mounted on two wooden rollers to reduce friction. The team is hitched to a doubletree attached by a swivel on the opposite end of the pole. This allows the team to be turned around when the plunger is pulled back for each load.

The use of pole slides is rather closely confined to certain localities in Colorado where a large tonnage of wild or mixed hay is stacked with them. The other style is used in sections along the Pacific coast.

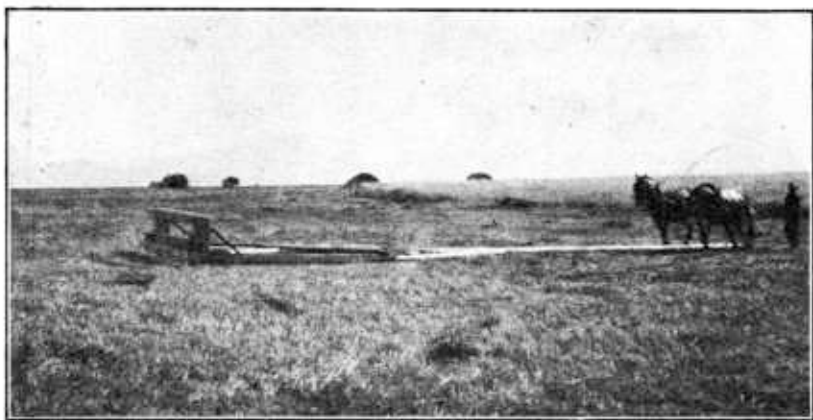


FIGURE 12.—The plunger used with the slide stacker to push the hay up the slide onto the stack

With this type of stacker, hay is delivered at the base of the slide as in Figure 11. The plunger is then started forward as in Figure 12, and pushes the hay up the slide and onto the stack as in Figure 13. By driving the team at different speeds the hay can be made to fall either at the front or the back of the stack. With the fan-shaped slide large stacks are more easily built than with the other styles, as the plunger driver can deliver hay near either end of the stack, which saves the stack men a large amount of work.

As these stackers handle large quantities of hay very rapidly, two or three men are usually required on the stack. A heavy team is needed on the plunger, which together with the hay makes a considerable load.

As these stackers are homemade outfits, the cost is only a few dollars if the poles are cut on the farm or obtained from near-by woods. Unless suitable poles can be secured in the vicinity it scarcely pays to try to build this outfit, as the materials can seldom be bought from a lumber yard.

A slide stacker, somewhat similar to the overshot stackers shown in Figures 2 and 3 is now manufactured and is in use in scattered sections of the Middle West. Instead of being open, the frame has a slide of light boards and is as wide as the stacker head. Only one set of teeth is necessary as the slide takes the place of the set appearing in Figure 2.

The slide stacker can be used to build individual benches (stacks) if mixed hay is put up; or a group of five to seven benches joined together at the ends making one continuous stack if wild hay is stacked. Individual benches of mixed hay built with a fan-shaped slide are about 16 feet wide, 30 feet long, and 22 feet high, which is 4 feet higher than the stacker. Grouped benches of wild hay usually contain from 10 to 12 tons each.



FIGURE 13.—The plunger pushing a load of hay over the top of the slide

Slide stackers are used for putting up both wild and mixed hay in limited localities of the West, but could be used equally well in certain other localities. The usual crew for operating this type of stacker, when putting up wild hay, consists of 3 men operating sweep rakes, 1 man driving the plunger team, 2 men on the stack, 2 men to rake the scatterings. This crew will put up from 5 to 7 stacks, each of 10 to 12 tons, daily.

With mixed hay, a crew of 6 men will put up 60 tons daily. The 2 men needed to rake the scatterings of wild hay are eliminated when mixed hay is being stacked as little if any of this hay is left by the sweep rakes. If only 2 sweep rakes are used, the crew puts up about 40 tons of hay in 9 hours.

The greater capacity of each sweep when a slide stacker is used is caused by the fact that the hay can be left at the foot of the slide as the plunger is able to pick up the hay and push it up on the stack. With all other types of stackers it is usually necessary to

give the hay a push after the sweep has placed the hay on the stacker head and has backed away. This takes added time and tends to slow up the daily capacity of each sweep.

CABLE STACKERS

The cable type of stacker is one of the simplest and most generally used of the homemade haying appliances. (Fig. 14.) The A-shaped frames are usually made from poles that can be obtained on the farm or in the neighborhood. The remainder of the material can be bought ready for use from most hardware dealers. Ordinarily the material that must be bought for this outfit consists of 1 reversible cable carrier; 1 double harpoon fork, or grapple fork, or the required



FIGURE 14.—The cable stacker, an inexpensive device using a sling or fork to unload the wagon at the end of the stack. After the hay is elevated the load is tripped at any point on the stack indicated by the stackers. Stacks of alfalfa hay up to 200 tons are made with this outfit

number of slings; 150 feet of half-inch galvanized steel cable, on which the carrier travels and which is used also for end guys; 2 cable clamps; 2 long bolts to bolt the tops of the poles together; 3 steel-yoke knot-passing pulleys; 130 feet of $\frac{3}{4}$ -inch manila carrier rope; and 65 feet of trip rope. The height of the stack that can be built with this outfit depends upon the length of the poles used. Poles 32 feet long will serve for most conditions, although poles 60 feet long are used in the far West.

This is a satisfactory type of stacker if hay is stacked each year in a yard adjoining the feed lots. Many farmers use it when unusually large stacks are built in a permanent location, whether near the feed lots or in the fields. It is not so desirable for large stacks of alfalfa hay that is to be sold, as it may be necessary to mix the different cuttings, a practice which usually lowers the value.

To move and set up a cable stacking outfit requires considerable time, and ordinarily fairly large stacks should be made in order to prevent loss of time by the crew while waiting for the stacker to be moved. On many western hay ranches the cable stacker is moved but once during the season.

The ordinary cable stacker is capable of making ricks up to 40 feet in length, and longer ricks can be made when an extra-long cable is used. The width of the rick varies from 12 to 20 feet, and the height varies from 20 to 30 feet. The contents of the stacks may be anywhere from 10 to 30 tons or more. When the quantity of hay stacked per hour or per day is known, the size of the stack may be regulated so that it will be finished about noontime or by evening. If this is done, the crew will lose little time, since the stacker can be taken down and moved in the morning while the crew is waiting for the dew to dry, or at noon, or even late in the evening after the day's work is done.

With larger outfits, such as are used in the West, stacks up to 200 tons are made with the cable stacker. Stacks of this size are usually built near the feed yard, and in dry climate may be kept for two or three years with but little loss.

The rate of stacking with a cable stacker is about the same as when hay is put into a shed or barn with a hay carrier and sling or fork. The difference is that only one man is needed to handle the hay in a shed or barn, whereas two are required on the stack. A crew of 3 men on sweeps, 2 on the stack, 1 trip man, and a stacker-team driver will put up 35 to 40 tons daily. The sweeps drop the hay on slings which take up the entire load of 700 to 1,000 pounds at one time. When wagons are used, the hay is loaded with a hay loader and 2 more men are required but the daily tonnage handled is no greater.

DERRICK STACKERS

Derrick stackers are used to a considerable extent in the Western States, and are especially adapted to alfalfa if the hay is cured in the cock. They are seldom used in sections where mixed and wild hays are stacked as other types are usually more efficient for these kinds of hay.

These stackers are all homemade outfits, therefore considerable variation occurs and many styles are found. According to men who have used different stackers, the derrick excels all others for handling alfalfa hay if it is hauled to the stacker on slips. With this method there is a minimum loss of leaves from shattering and a saving of labor on the stack.

Perhaps the best of these stackers and the one in most general use is the Mormon derrick, two variations of which are shown in Figures 15 and 16.

The Wilson derrick (fig. 17), another style, is a lighter outfit than the Mormon. This stacker requires three supporting cables attached to the top of the pole and to stakes driven in the ground, therefore more men and time are required to move to a new set. Two variations of the Wilson derrick are shown in Figures 18 and 19, and a

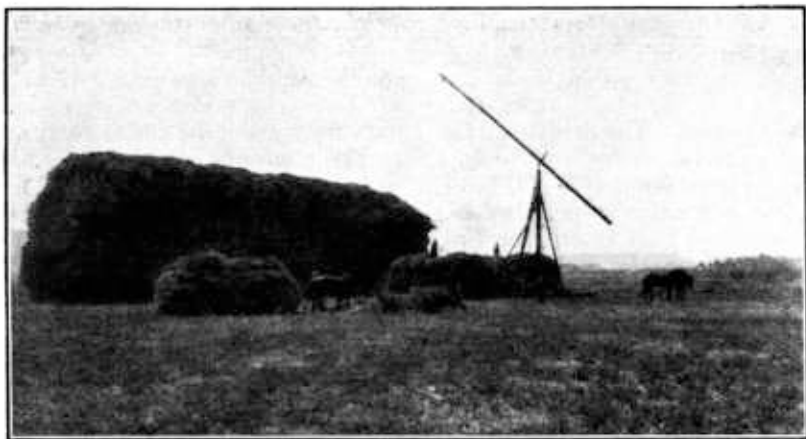


FIGURE 15.—The Mormon derrick stacker, widely used in the intermountain States. Large stacks can be built with this outfit, which is easily moved, as no guy wires are needed for support. Slips are used almost entirely for transporting hay to this type of stacker, although wagons can be used

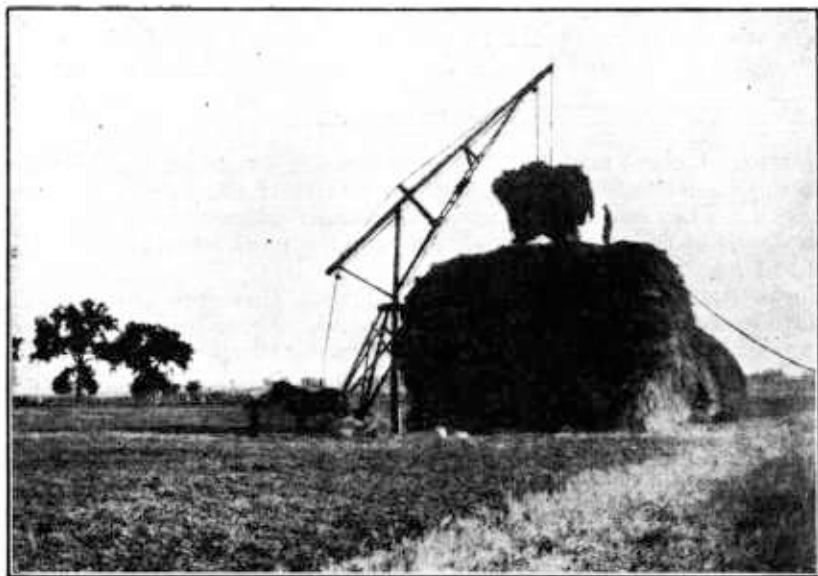


FIGURE 16.—Another style of Mormon derrick with a different bracing; the boom pole and upright turn together

derrick stacker mounted on wheels, which allow it to be moved quickly, is shown in Figure 20. A pole stacker somewhat similar to the Wilson derrick is shown in Figure 21.

Wagons for long hauls and slips for short hauls are used almost exclusively when hay is stacked with a derrick or pole stacker. A

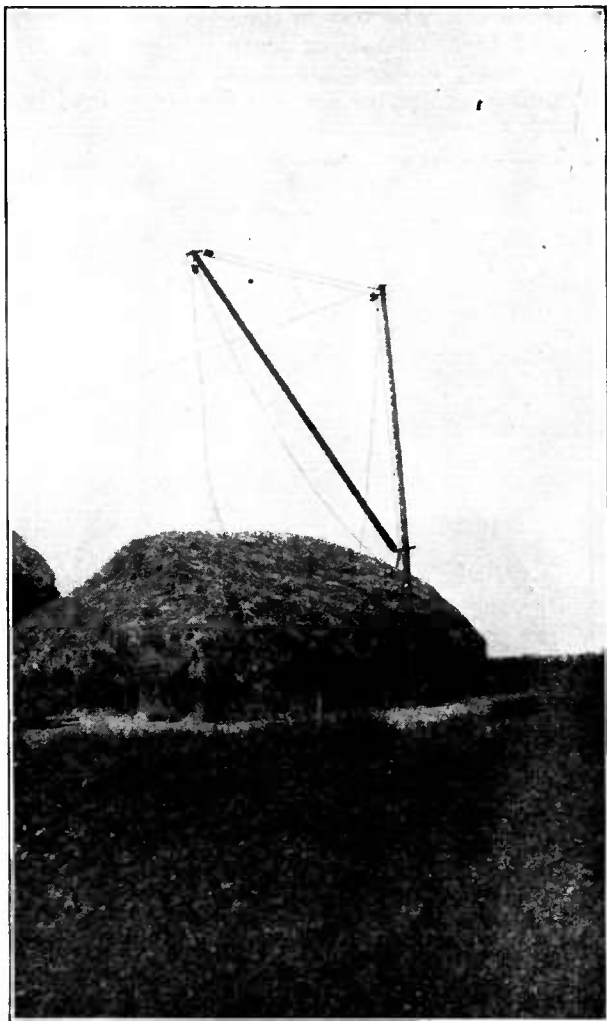


FIGURE 17.—The Wilson derrick. As wire cables are necessary to support this stacker, it is more difficult to move. Both ends of the boom pole are movable

hay slip (fig. 22) is a contrivance for transporting hay from the field to the stack. Slips are used almost exclusively with derrick stackers for putting up alfalfa, as they do away with excessive leaf shattering and prevent dust and dirt from mixing with the hay, thus improving its feeding and sale value.

Slips are made in two styles, each having a platform 8 feet wide by 16 feet long. In the simplest form the platform is constructed of 1-inch boards held together on top by four 2 by 4 inch cross pieces. A better form is built on runners and lasts longer than does the former as the runners can be replaced.

In operating a slip, a sling is placed on the bed, or two chains on the bed, one on each side. The hay is then pitched on the slip, which has a capacity of 1,000 pounds or more. When the slip, which is pulled by two horses, reaches the stack, the chains or slings are hooked to the pulley on the stacker and the entire load is elevated at one time.

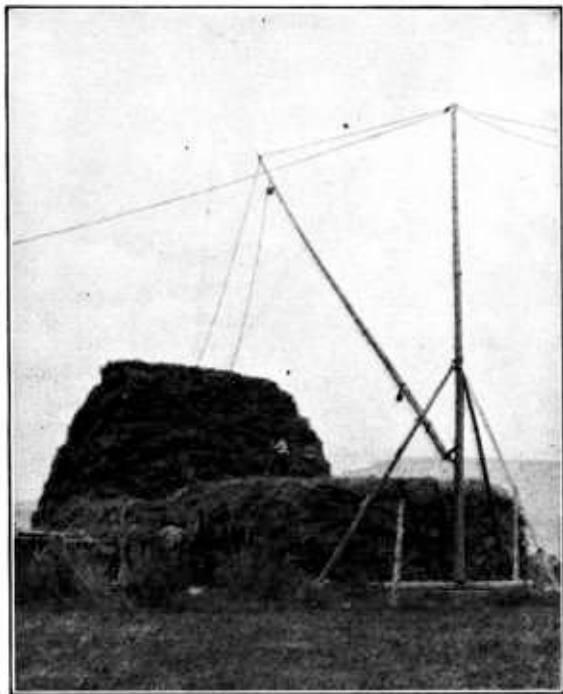


FIGURE 18.—The boom pole on this style of Wilson derrick is fixed to the upright, thus giving but one adjustment

It is possible to use a sweep rake with a derrick stacker, but if this method is employed to deliver the hay, the slings used to elevate the load must be sunk flush with the surface of the ground. The sweep can then be driven onto the slings, and can deposit its load and back away without disturbing them.

If the poles are cut on the farm, the derrick stacker need cost but a few dollars.

The size of stacks made by the different styles of derrick stackers varies considerably. Small stackers of this type are often too low to permit the building of tall stacks. Stacks built with these outfits may contain from 10 to 30 tons. Some of the larger stackers used in the West, like the Mormon derrick, build stacks of 80 to 100 tons,

and as high as the cable stackers build. Stacks made by derrick stackers are, in general, not as long as are those made by the cable stacker, because of the large amount of labor required in moving the hay to the ends of the stack. Long stacks sometimes are made by making a bench of moderate length, say 30 feet, and then moving the stacker so that the next bench can be joined to the first one.

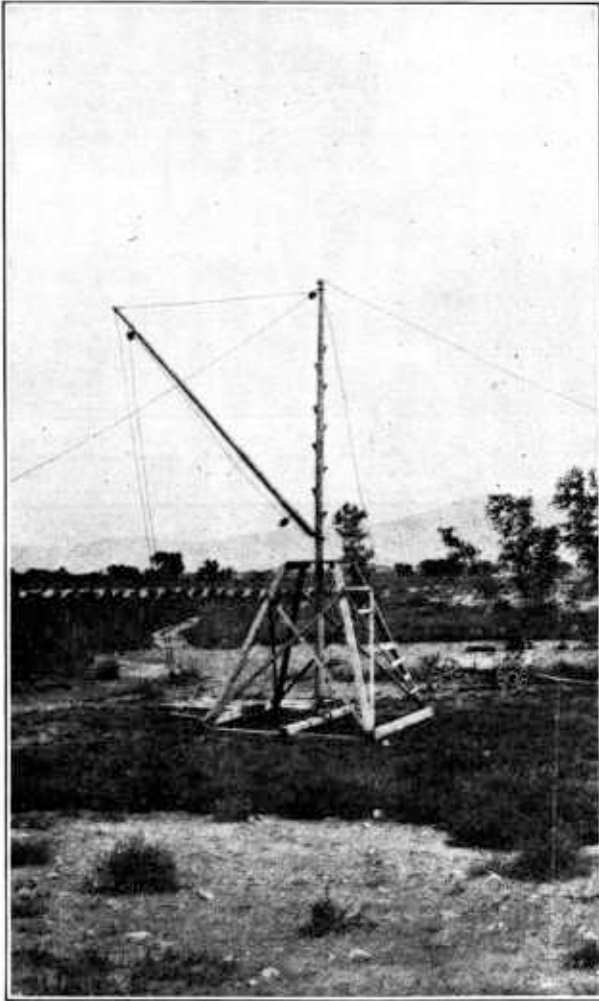


FIGURE 19.—Another style of Wilson derrick. The framework at the bottom allows it to be moved more easily than the unsupported style

Derrick stackers of the Mormon style are almost exclusively used in some western districts in which both large and small acreages of alfalfa hay are grown. They can also be used satisfactorily for other varieties of hay. For putting up a large tonnage of alfalfa hay a crew of seven men with slips is used to haul the hay to the stacker.

Three spike pitchers are in the field to help the drivers load their slips. Each slip makes a round trip every 15 minutes, including about $1\frac{1}{2}$ minutes for unloading at the stack. When the slip comes

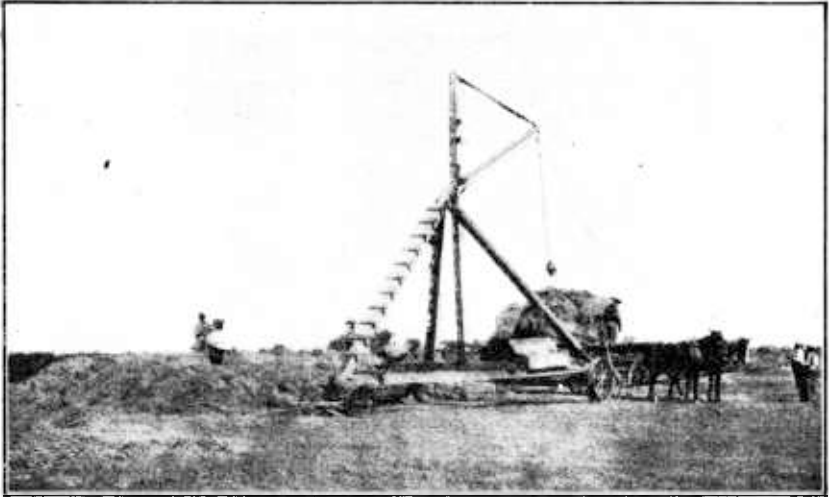


FIGURE 20.—A large, heavily constructed, homemade derrick stacker mounted on wheels. This stacker can handle very large loads of hay and can be moved quickly to a new stack site

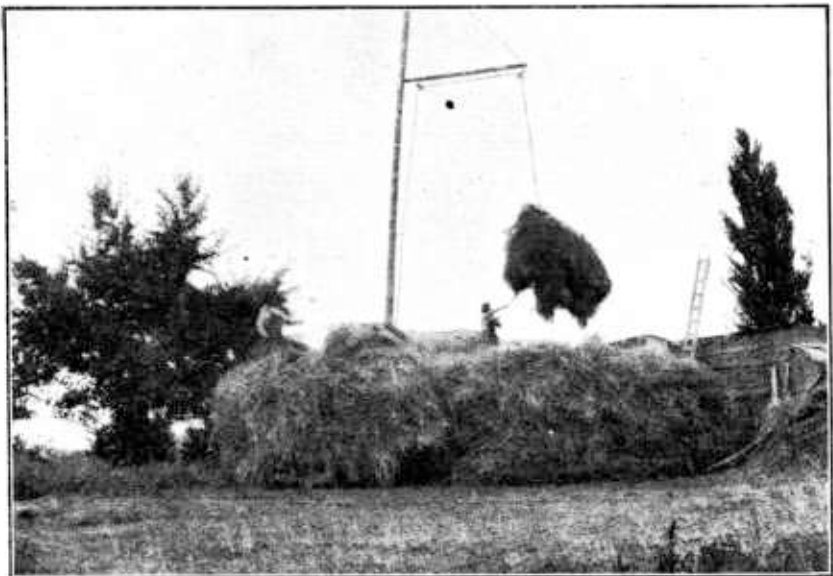


FIGURE 21.—A simple homemade pole stacker, capable of making a very tall stack. As the hay leaves the wagon the stacker turns and the hay is swung over the stack and dropped at the desired point. Stackers of this type must be held by heavy wire guys

to the stack the driver and trip man fasten the pulley hook to the two chains on the bed of the slip and the entire load of 1,000 to 1,500 pounds is pulled up on the stack. The derrick team driver and

two men on the stack complete the crew. This crew stacks from 80 to 90 tons of hay daily, depending on wind and weather.

On smaller acreages with a stacker like the one in Figure 16 a crew of 3 men with slips, 1 spike pitcher to help load, 2 men on the stack, and a man or boy to drive the stacker team will put up about 30 tons daily.

That it is possible to stack as much hay with a smaller crew is illustrated by the performance of a 5-man stacking crew. A spike pitcher is not used, as each man loads his own slip and, by lowering the hay to the top of the stack at a place where it is wanted before it is tripped, one man can do all the stacking.

TRIPOD STACKERS

The tripod stacker is the simplest and perhaps the most easily constructed of all homemade stackers. Three poles about 30 feet long are bolted together at the top. (Fig. 23.) The bottom is spread



FIGURE 22.—One-half ton of alfalfa hay loaded on a slip that is built on runners

out far enough to permit a stack of the desired size to be built under the tripod. The equipment consists of three pulleys, a hay rope, a trip rope, and a horse fork. It is not necessary to use guy wires to hold this style of stacker in place, as with some of the derrick and pole stackers.

If poles can be obtained for the cutting, the tripod stacker can be built at practically no cost as the fork and rope from the barn can be used in making up the outfit.

The tripod stacker is not adapted to making long or high stacks, and often is used by small crews. This stacker, as well as the cable type, is generally used for stacking hay that is hauled to the stack on wagons. Tripod stackers are easier to move than the cable or derrick stackers, which require the use of guy wires, and for this reason they are generally used for building comparatively small stacks.

This style of stacker is satisfactory for a small crew made of 3 men, or 2 men and a boy. In loading a man or boy drives the team and 2 men handle the hay on the wagon as it is delivered from the

hay loader. When the load reaches the stack, one of the crew drives the team which elevates the hay to the stack, one handles the fork or slings on the wagon, and the third member of the crew stacks the hay. With this size crew about 15 to 18 tons of hay are stacked daily.

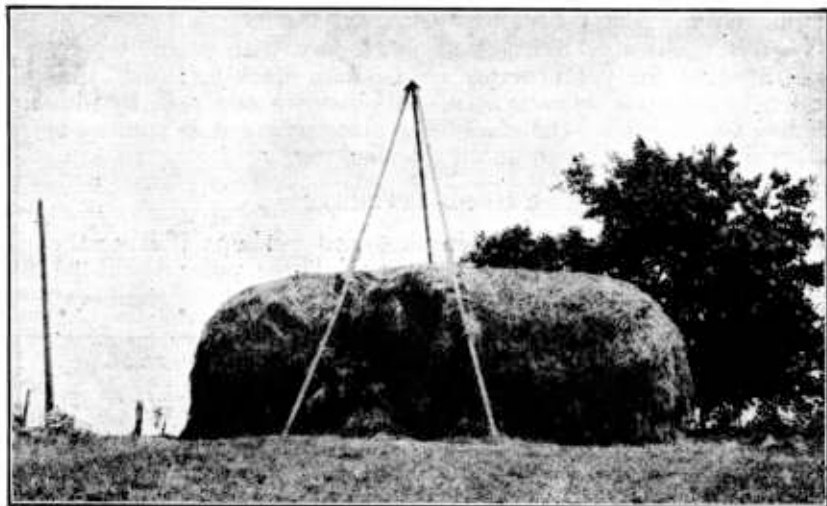


FIGURE 23.—A tripod stacker that can easily be made on the farm. It is self-supporting and can be taken down and moved easily but not so quickly as those mounted on wheels. Stacks larger than this are seldom built by the small crew using a tripod stacker



FIGURE 24.—A rope stacker in operation, showing the method of elevating the hay on the stack

By increasing the crew to six men and adding a second wagon, from 30 to 35 tons can be handled daily.

ROPE STACKERS

Cheapness and lightness are the advantages of rope stackers, the principle of which is illustrated in Figure 24. This type is used in

a few scattered localities for stacking alfalfa or mixed hay. Compared with other stacking methods, this is a poor one to use.

The style illustrated employs four ropes, three of which are passed lengthwise over the top of the stack and fastened to an iron ring. A stake, over which the ring is placed, is driven into the ground at one end of the stack and far enough away to allow the load to be

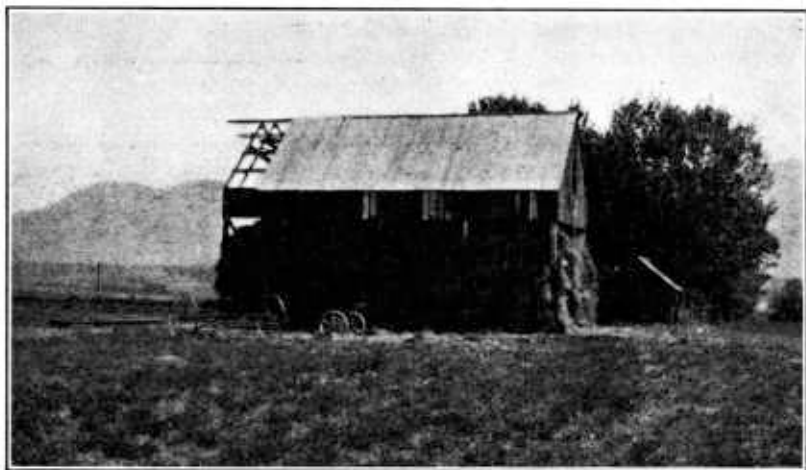


FIGURE 25.—A hay shed, showing the method of protecting stacked hay in districts of heavy rain or snowfall

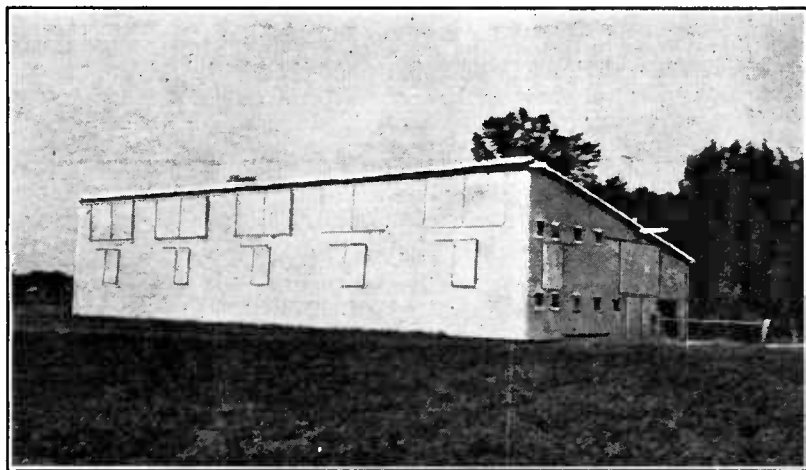


FIGURE 26.—A hay barn constructed so that the hay may be put into the barn through doors by means of an overshot stacker

driven between. The sweep rake deposits its load on the ropes, after which the fourth rope, also on top of the stack, is hooked to the ring which is lifted from the stake. A team hitched to the end of the fourth rope is started, and the hay rolls up the stack. A man on the stack holds the three ropes as the hay rolls up. When the load reaches the desired spot the ropes are dropped and removed, the hay is stacked, and the ropes are rearranged for the next load.

Another style is also used which employs two ropes, which are attached to a ring on one end and on the other end to stakes or poles driven in the ground at the far end of the stack. When the load reaches the desired place on the stack, the team is stopped and the ropes are pulled out and thrown to the sides of the stack.

This type of stacker builds a stack which is suitable only for districts of light rainfall, as the stack is rather rough and does not shed water readily. The stack is also of peculiar shape, in that the end where the hay is elevated is lower than the opposite end and can not be built up to an equal height when the stack is completed.

The tonnage of hay stacked daily by the crew with this outfit is lower than that for the same size of crew with most of the other styles of stackers described.

HAY SHEDS AND BARNs

In districts in which rainfall is heavy or snow is deep sheds or barns are often used in which to store hay. (Figs. 25 and 26.)

Wagons are most frequently used for hauling from the field when hay is put in a shed or barn. A track and a hay carrier are usually installed and slings or a fork are used for unloading the hay from the wagons, but it is possible to use some types of stackers and stacking equipment for the work. In some districts instead of installing a permanent track and carrier a cable stacker (fig. 14) is used. Two poles, the same as with a cable stacker, are set up outside at one end of the shed or barn and the cable is run through to the other end where it is fastened solidly to the building or to a tree or post on the outside.

If a hay barn similar to that in Figure 26 is constructed, sweep rakes are used to bring the hay in from the field and an overshot stacker is used to put the hay directly into the barn.